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SEMINAR ON THE ROLE OF HEALTH SERVICES AND TRAINING INSTITUTES IN THE CONTROL OF VECTORS AND RESERVOIRS OF DISEASES

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A BRIEF REVIEW OF THE EPIDEMIOLOGY AND RELATIVE IMPORTANCE OF VECTOR-BORNE DISEASES IN THE EASTERN MEDITERRANEAN REGION

by

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Vector-borne diseases in the Eastern Mediterranean Region still constitute a very serious problem, particularly in the countries which, geographically, belong to the African continent.

Among these diseases, the most important are malaria and schistosomiasis, but several foci of onchocerciasis, trypanosomiasis and, to a limited extent, plague, also exist. Leishmaniasis, in its cutaneous form, is endemic in most countries of the Region, and is also present in many of them in the visceral form, in small ill-defined foci. Viral diseases, such as Dengue fever, are found mostly in the coastal areas along the Indian Ocean, and occur from time to time, in the form of small localized outbreaks. Rift Valley fever is present and has recently spread from Central East Africa to Egypt.

The epidemiology of most of these diseases recognizes a few common factors which include : (1) the presence of abundant breeding places for water-borne insects, and (2) a high environmental temperature and humidity, enhancing insect survival. Such conditions are essential for vectors such as the Anopheles, Culex, and Aedes mosquitoes, as well as the Simulium fly.

A number of vector-borne diseases also require an animal reservoir, and their control is therefore based on the four following measures :

- Reduction of the human reservoir
- Reduction of the vector population
- Reduction of breeding places
- Reduction of the animal reservoir (if any)

1. Reduction of the human reservoir requires :

1 1 The identification of affected persons and carriers. This implies the availabil: of a population-screening mechanism and of an epidemiological surveillance system

1.2 The identification of the appropriate methodologies for diagnosis :

1.2.1 examination of blood·

- direct · for malaria, trypanosomiasis, relapsing fever, etc
- serological : for leishmaniasis, trypanosomiasis, murine typhus, plague, etc.

1.2.2 examination of cerebro-spinal fluid (CSF) : for trypanosomiasis

1.2.3 examination of urine : for schistosomiasis.

1.2.4 examination of stools : for schistosomiasis.

1.2.5 direct clinical examination : for dracunculiasis, leishmaniasis, onchocerciasis, trypanosomiasis.

1 3 Delivery system for therapy of cases can be either mass treatment, domiciliary treatment, treatment through public health workers, or through the basic health services establishments.

1.4 System of follow-up of the treated cases.

2 Reduction of the vector population implies :

2.1 Knowledge of the bionomics of the vector.

2.2 Knowledge of the weak points of the vector's life cycle, amenable to control, particularly biological control.

2 3 Knowledge of the vector's geographical distribution.

2 4 Knowledge of the methodologies for the reduction of the lifespan of vectors, or for their elimination.

3. Reduction of breeding places implies :

3.1 Knowledge of their geographical distribution.

3.2 Knowledge of the dynamics of their formation.

3.3 Methodologies for their reduction or elimination.

4. Reduction of the animal reservoir requires

4.1 Identification of the animal reservoir.

4.2 Knowledge of geographical distribution of reservoirs.

4.3 Knowledge of the bionomics of the animals involved.

4.4 Knowledge of the weak points in their life cycle, amenable to control.

4.5 Knowledge of the methodologies for their reduction and/or elimination.

The above aspects, which are related to the problems of control of vectors and reservoirs of vector-borne diseases, imply for their implementation the existence of trained personnel specialized in these aspects for each disease.

In reality, as an example, the epidemiology of malaria may have some factors in common with the epidemiology of filariasis or onchocerciasis but it has a specific identity in all its aspects such as human reservoir, vector population, breeding places, etc.

It is therefore necessary that the multiplicity of the epidemiological characteristics of each disease be taken into consideration when their control is dealt with in a global manner, as is the case in the organization of primary health care schemes.

The same applies to the control of the animal or human reservoirs of disease. It is clear that generalization in this domain is not possible. Each disease has its own peculiarities and requires an individual epidemiological and control approach.

The knowledge of the epidemiology of vector-borne diseases is an essential element in the implementation of successful control programmes.

It is therefore necessary that integrated health services include specialized staff with the ability to identify the epidemiological components for each disease as detailed above.

This pre-supposes specialized training in vector-borne diseases, epidemiology, entomology and environmental sciences.